CLAIMS

1. A process for obtaining carbon nanotubes by growth, using the CVD method, on nanoscale/microscale supports, characterized in that it comprises:

   - the addition of a compound as carbon source containing a catalyst, into a stream of inert gas and hydrogen.

2. The process as claimed in claim 1, characterized in that it also comprises:

   - the heating, in a reaction chamber, of a nanoscale/microscale ceramic material or of carbon fibers, to a temperature of 600-1100°C, in a stream of inert gas;

   - the cooling of the chamber down to room temperature; and

   - the recovery of the product formed.

3. The process as claimed in claim 2, characterized in that the ceramic material is in the form of nanoscale/microscale particles or fibers.

4. The process as claimed in claim 3, characterized in that the ceramic material is formed from the following: carbon fibers; glass fibers; SiC, TiC, Al_2O_3, SiO_2 or B_4C particles and fibers; silica fume; clays (clay particles); or wires comprising a metallic material such as Fe, Ni, Co, Ti, Pt, Au, Y, Ru, Rh, Pd, Zr, Cr or Mn.

5. The process as claimed in any one of claims 1 to 4, characterized in that the compound as carbon source is chosen from the following: liquid hydrocarbons of the group comprising xylene, toluene and benzene; or n-pentane; or alcohols, such as ethanol and methanol; or ketones, such as

acetone; or, as a variant, the compound as carbon source is a gaseous hydrocarbon such as acetylene, methane, butane, propylene, ethylene and propene; or the compound as carbon source is solid, such as for example camphor.

6. The process as claimed in any one of claims 1 to 5, characterized in that the catalyst is chosen from the group comprising the following: an iron, cobalt or nickel metallocene; or else iron, cobalt or nickel nitrates, acetates or sulfates, especially Fe(II), phthalocyanine (FePc) and iron pentacarbonyl ($Fe(CO)_5$).

7. The process as claimed in any one of claims 1 to 6, characterized in that the catalyst and the compound as carbon source are used in an amount from 0.001 to 0.1 g of catalyst per ml of compound.

8. The process as claimed in any one of claims 1 to 7, characterized in that the ratio of inert gas to hydrogen is 5/95 to 50/50.

9. The process as claimed in any one of claims 1 to 8, characterized in that, before said step of heating the support material, a silicon-containing compound is used under conditions allowing silicon or a silicon derivative, such as SiC, SiO or SiO_2, to be deposited on the surface of the support material.

10. The process as claimed in claim 9, characterized in that the silicon-containing compound used is SiO or a silane, such as $SiCl_4$.

11. Products thus obtained by the process as claimed in any one of claims 1 to 10, characterized in that they are multiscale composites formed from

carbon nanotubes bonded to nanoscale/microscale carbon fiber or ceramic fiber support materials.

12. Multiscale composites, characterized in that they comprise carbon nanotubes bonded to nanoscale/microscale supports in a polymer, metal or ceramic matrix.